FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

30 March to 5 April, 2014 (Week 14)

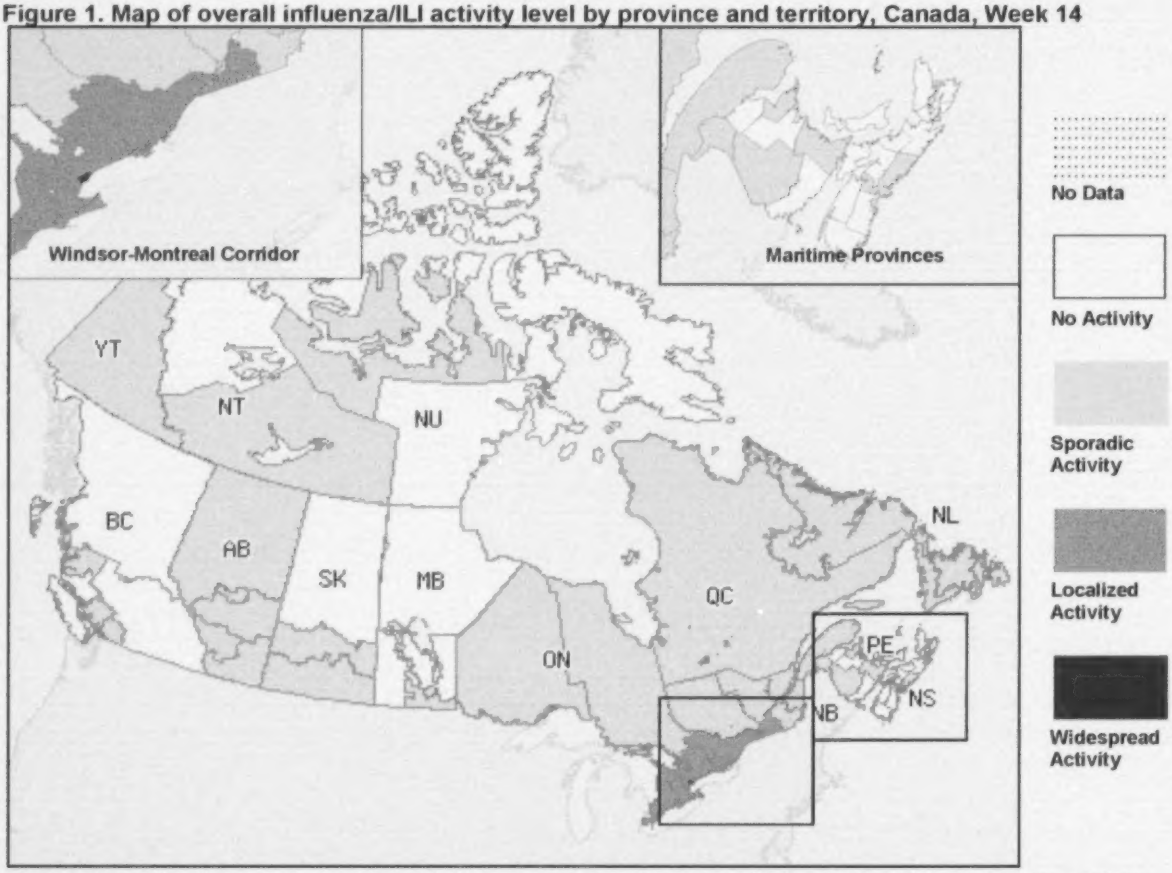
Overall Summary

- In week 14, influenza activity in Canada continues to decline slowly, with fewer cases of influenza B reported compared to the previous week. Although the influenza A(H1N1) virus was the most common influenza virus this season, the majority of influenza viruses circulating currently are influenza B.
- While the influenza A(H1N1) virus has mostly affected adults 20-64 years of age this season, influenza B is having a greater impact on adults 65 years of age and older, as well as young persons 5 to 19 years of age.
- As of week 14, 3,946 hospitalizations and 223 deaths have been reported from participating regions, which is comparable to reports in past influenza seasons.
- Influenza activity remains within expected levels for this time of year.

Influenza/ILI Activity (geographic spread)

The number of regions reporting localized or widespread influenza activity has been stable in recent weeks, with the majority of activity reported in Eastern Canada. In week 14, one region in Ontario reported widespread activity and five regions (ON(4) and QC(1)) reported localized activity (Figure 1).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 14

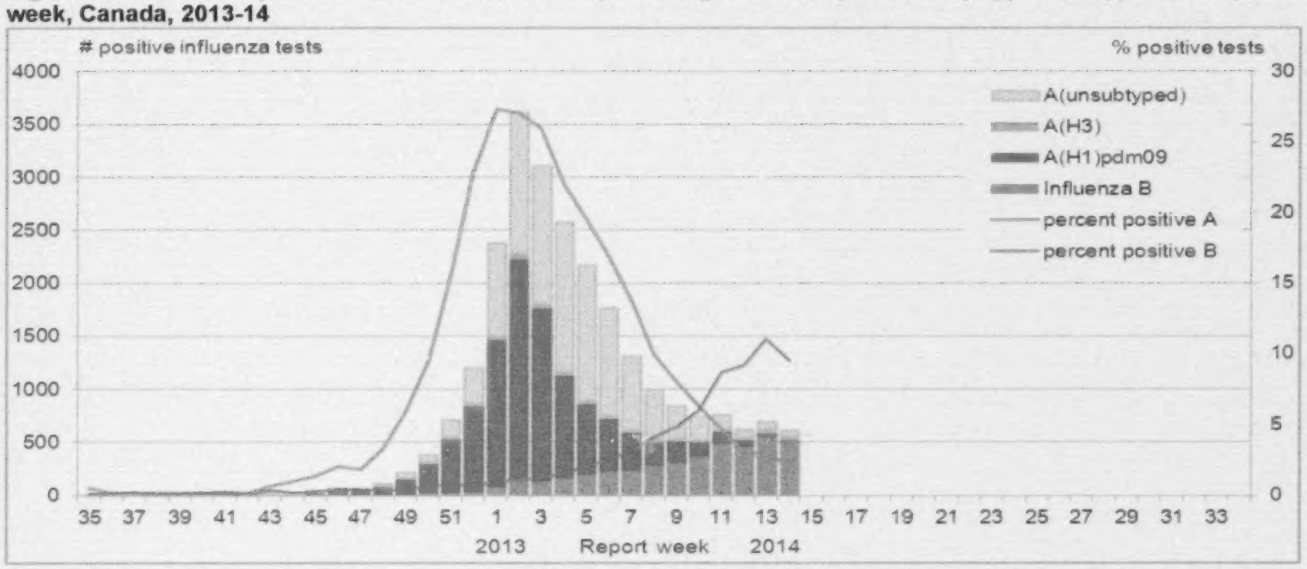


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests decreased from 697 in week 13 to 613 (11.7% of tests) in week 14. Influenza B remained the predominant virus in week 14, representing 81% of influenza detections (Figure 2). The highest proportions of influenza B this season have been reported from Newfoundland & Labrador (34.5%) and Quebec (29.0%), followed by Ontario (20.5%) and British Columbia (10.2%) (Table 1). Slightly more influenza B has been observed to date this season compared to the same time during the 2012-13 season. Among the 20,448 cases for which information on age and type/subtype has been received this season, 53.8% were 20-64 years of age (Table 2). Significantly greater proportions of influenza B cases have been ≥65 years of age and 5-19 years of age compared to cases of A(H1N1)pdm09. The proportion of influenza detections among persons ≥65 years of age has increased in recent weeks, while the proportion of detections in other age-groups was stable or declining.

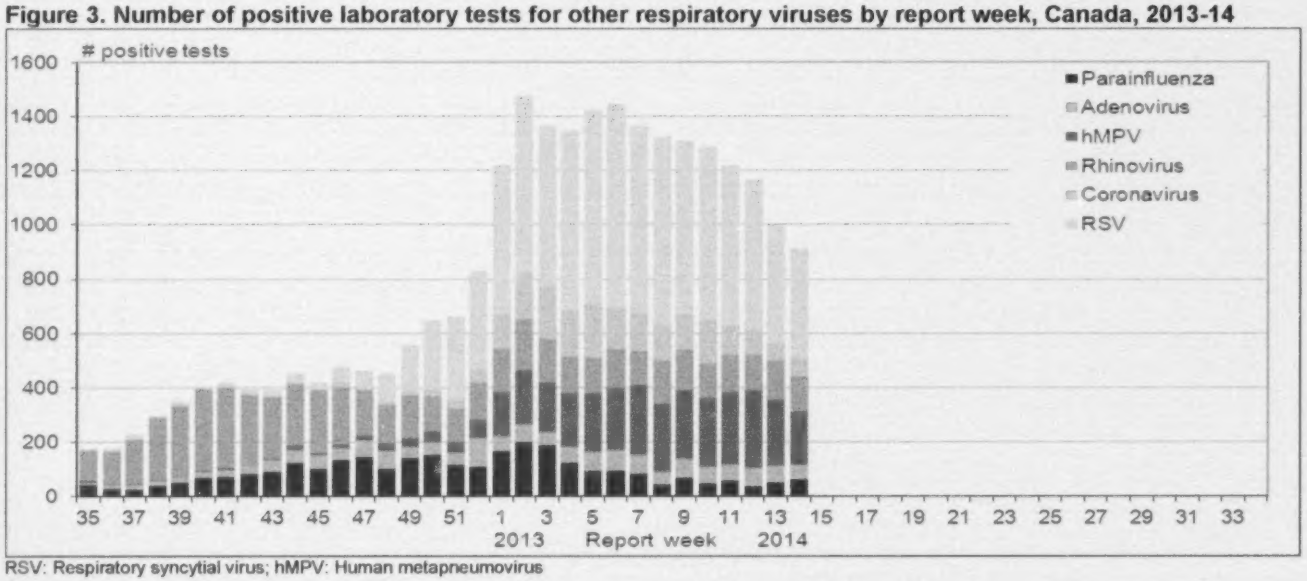
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



The number of positive tests for RSV has been declining gradually over recent weeks, similar to the trend observed in recent seasons. The number of positive tests for parainfluenza and coronavirus have followed a downward trend since early February but both increased in week 14. More detections of adenovirus and human metapneumovirus have been reported compared to the same period last season, but both have declined over the past two weeks. Detections of rhinovirus have been relatively stable during the winter months, although these detections represent an increasing percentage of tests positive since early January (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (March 30 to April 5, 2014)					Cumulative (August 25, 2013 to April 5, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	2	0	0	2	3	1780	1601	60	119	203
AB	15	13	0	2	31	3810	3441	58	311	226
SK	7	3	1	3	4	1362	978	7	377	57
MB	8	4	1	3	0	649	458	3	188	19
ON	51	6	24	21	300	5640	2468	318	2854	1458
QC	21	0	0	21	138	5309	676	3	4630	2168
NB	0	0	0	0	7	1488	370	1	1117	45
NS	3	0	0	3	0	170	134	4	32	4
PE	0	0	0	0	0	118	117	0	1	1
NL	7	0	0	7	16	360	104	0	256	190
Canada	**114**	**26**	**26**	**62**	**499**	**20686**	**10347**	**454**	**9885**	**4371**
Percentage[2]	18.6%	22.8%	22.8%	54.4%	81.4%	82.6%	50.0%	2.2%	47.8%	17.4%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

Age groups (years)	Weekly (March 30 to April 5, 2014)					Cumulative (August 25, 2013 to April 5, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	8	3	1	4	21	3232	1441	37	1754	378	3610	17.7%
5-19	3	0	0	3	21	1310	703	19	588	569	1879	9.2%
20-44	13	5	0	8	34	5043	2796	39	2208	641	5684	27.8%
45-64	10	2	2	6	57	4416	2380	55	1981	911	5327	26.1%
65+	18	3	6	9	96	2484	992	125	1367	1324	3808	18.6%
Unknown	2	1	0	1	1	135	102	20	13	5	140	0.7%
Total	54	14	9	31	230	16620	8414	295	7911	3828	20448	100.0%
Percentage[2]	19.0%	25.9%	16.7%	57.4%	81.0%	81.3%	50.6%	1.8%	47.6%	18.7%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 1,740 influenza viruses [86 A(H3N2), 1,301 A(H1N1)pdm09 and 353 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain. Nineteen influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

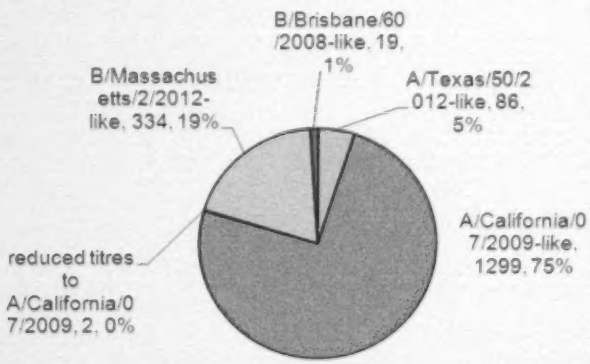


Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 1,740

The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 1,368 influenza viruses for resistance to oseltamivir and all but two were sensitive. All 1,370 viruses tested for resistance to zanamivir were sensitive. All 1,454 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

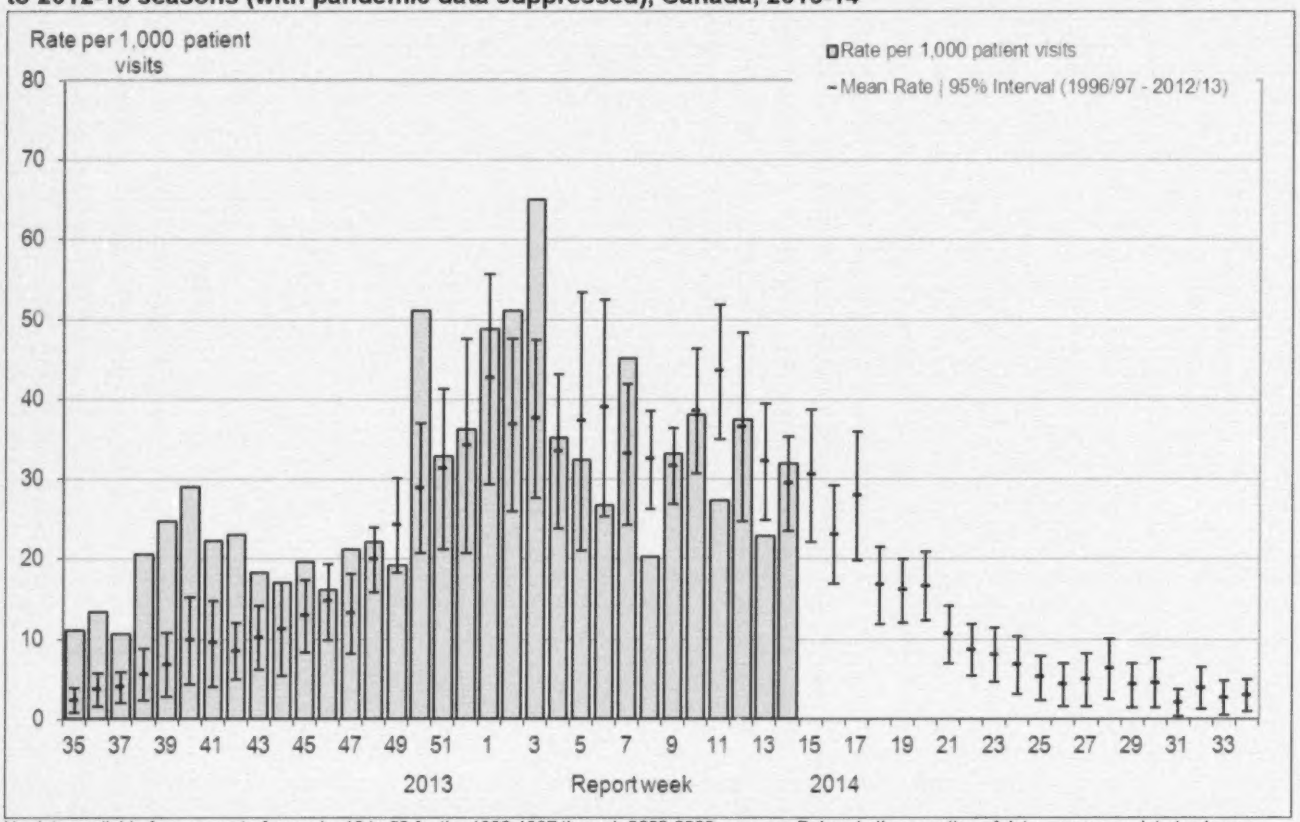
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	66	0	66	0	114	114 (100%)
A (H1N1)	1105	2 (0.2%)	1108	0	1340	1340 (100%)
B	197	0	196	0	NA[1]	NA[1]
TOTAL	1368	2 (0.1%)	1370	0	1454	1454 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate increased from 22.8/1,000 in week 13 to 32.0/1,000 in week 14; but was still within the expected range for week 14 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

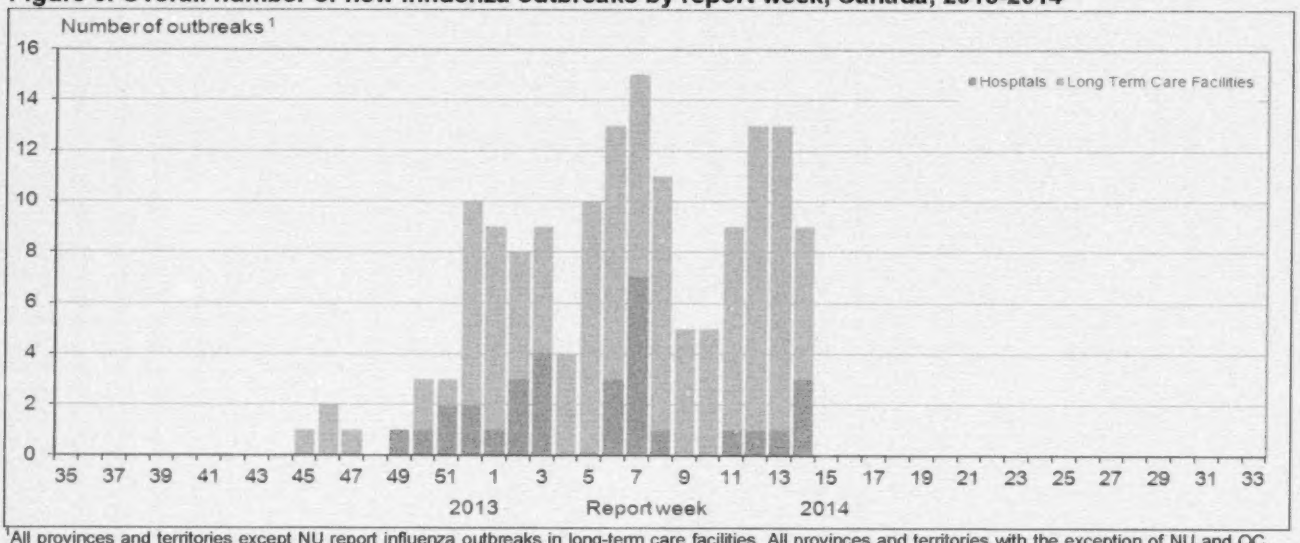


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 14, nine new influenza outbreaks were reported: six outbreaks in long-term care facilities, and three in hospitals (Figure 6). In addition, three outbreaks were reported in other settings or communities. Among the 12 influenza outbreaks, ten had data on the influenza type, and all were influenza B. Two additional outbreaks of influenza-like illness were reported in other settings or communities.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

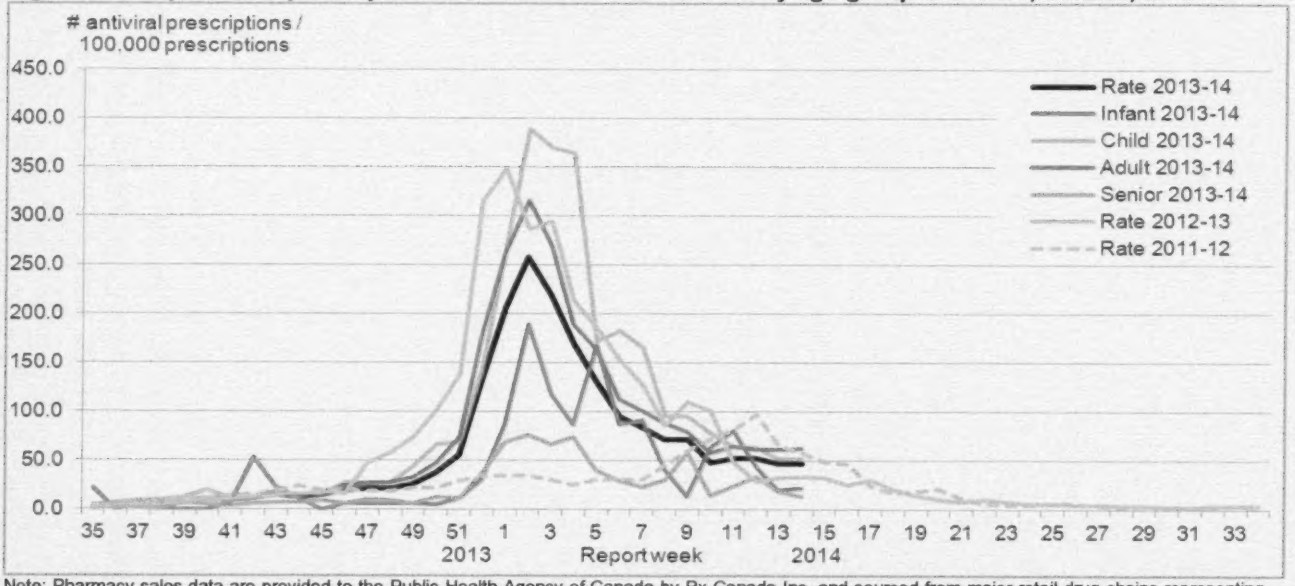


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

In week 14, the proportion of prescriptions for antivirals among all age-groups was similar to the previous week. Overall this season, the largest proportion of prescriptions for antivirals has been among children 2-18 years of age and adults 19-64 years of age, in keeping with laboratory detections of influenza (Figure 7). In contrast, the highest proportion of prescriptions for antivirals during the 2012-13 season was among adults ≥65 years of age.

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 14, 11 new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 16 in week 13. Influenza B was reported in 9 of the 11 cases in week 14 (Figure 8a). Although the number of cases is small, a greater proportion of cases with influenza B this season have been children between 2 and 10 years of age compared to A(H1N1)pdm09. No ICU admissions or deaths were reported in week 14.

To date this season, a total of 653 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 85% of which have been influenza A, and almost all of those subtyped (97%) were A(H1N1)pdm09. Children <5 years of age represent 74% of cases to date (Table 4). Ninety-four ICU admissions have been reported, of which 64 (68%) were children <5 years of age (Figure 9a). All but six were cases with influenza A, and 97% of those subtyped were A(H1N1)pdm09. Among the 89 ICU cases with available data, 57 (64%) were reported to have underlying medical conditions. No deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 14, 24 new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 42 in week 13 (Figure 8b). This season, a significantly greater proportion of cases of influenza B have been ≥65 years of age compared to cases of A(H1N1)pdm09. For a fifth consecutive week, the majority of hospitalizations were associated with influenza B, with a greater proportion of cases among adults ≥65 years of age. One ICU admission in an adult ≥65 years of age with influenza B, and no deaths were reported in week 14.

To date this season, 1,481 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 1,206 (81.4%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). ICU admission was required for 238 hospitalizations, all but 16 of which were cases with influenza A (121 A(H1N1)pdm09, seven A(H3N2) and 94 A(unsubtyped)). Approximately 80% of hospitalizations and ICU admissions were ≥45 years of age. Of the 180 ICU admissions with available information, 157 (87.2%) were reported to have at least one comorbidity and of the 202 ICU admissions with available information 141 (69.8%) reported not having been vaccinated this season. Sixty-seven deaths have been reported, all but seven with influenza A (34 A(H1N1)pdm09, three A(H3N2) and 23 A(unsubtyped)); seven cases 20-44 years of age, 27 cases 45-64 years of age and 33 cases ≥65 years of age (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

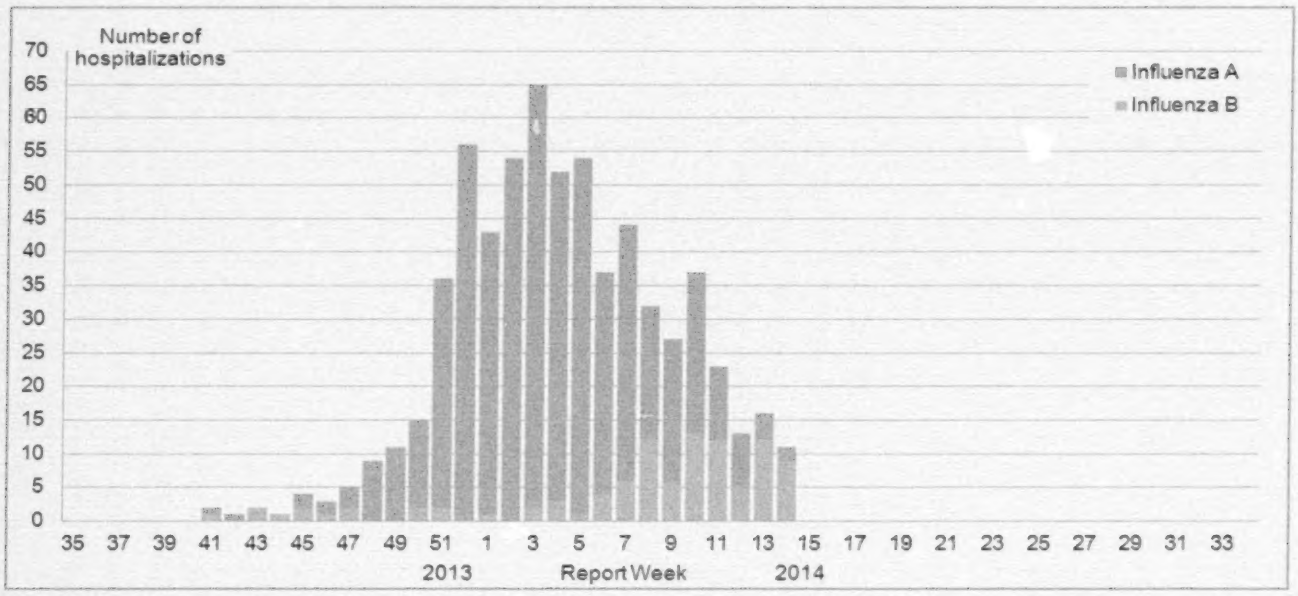
Age groups	Cumulative (25 Aug. 2013 to 5 Apr. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	105	34	0	71	4	109 (17%)
6-23m	161	50	1	110	16	177 (27%)
2-4y	165	55	3	107	30	195 (30%)
5-9y	83	27	0	56	39	122 (19%)
10-16y	40	14	1	25	10	50 (8%)
Total	554	180	5	369	99	653
%[1]	84.8%	32.5%	0.9%	66.6%	15.2%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

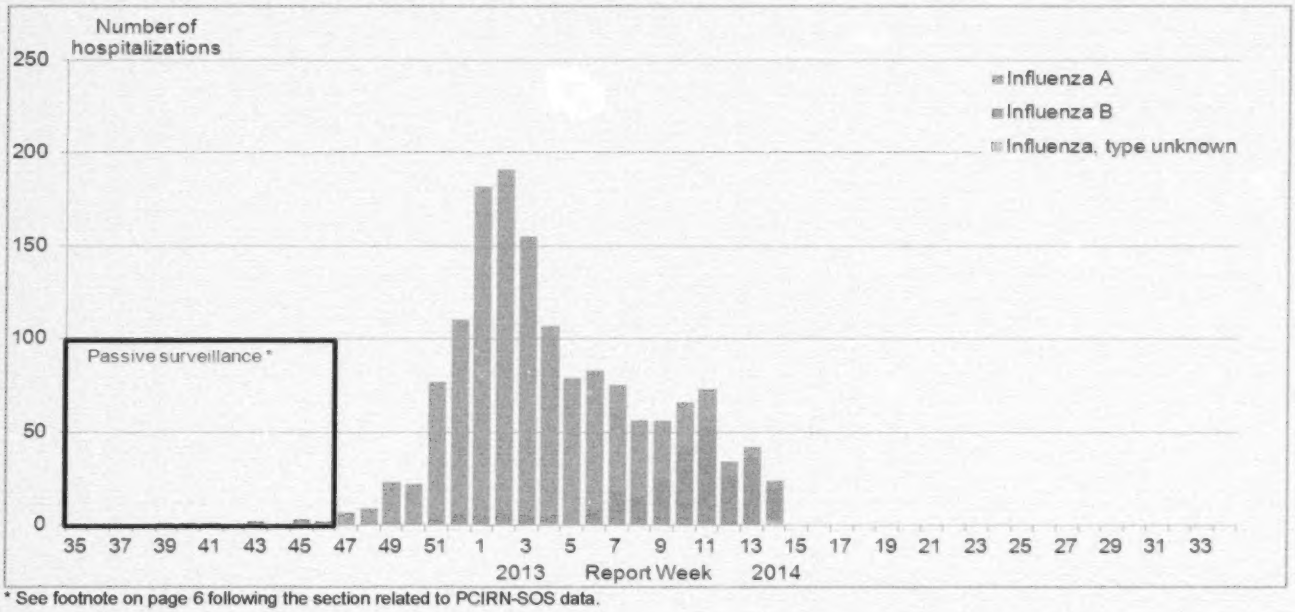
Age groups (years)	Cumulative (25 Aug. 2013 to 5 Apr. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	13	5	0	8	2	15 (1%)
20-44	254	131	6	117	17	271 (18%)
45-64	471	221	7	243	67	538 (37%)
65+	463	214	43	206	186	649 (44%)
Total	1201	571	56	574	272	1473
%[1]	82%	48%	5%	48%	18%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * Three cases for which the influenza type has not yet been reported, and five cases for which the age-group was not reported. are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



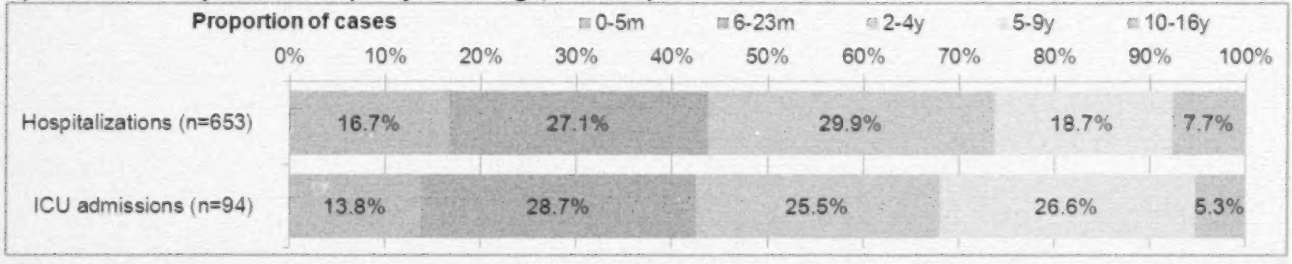
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



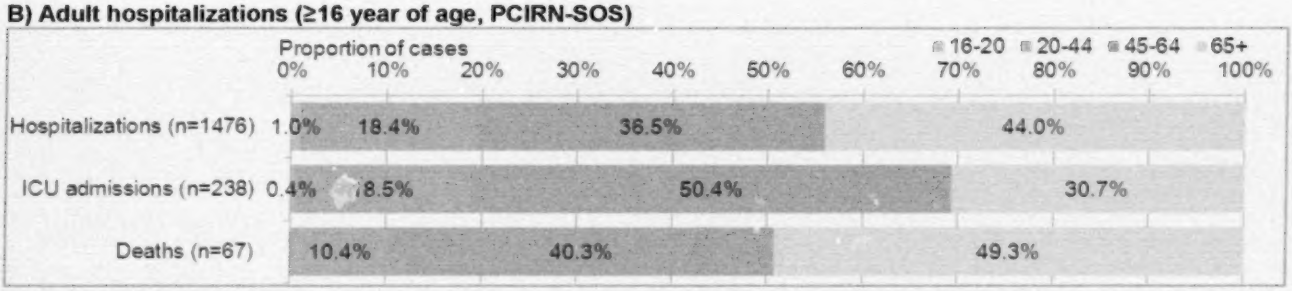
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 14, 89 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* As with other surveillance indicators in week 14, the majority were cases of influenza B (67, 75.3%). Seven ICU admissions were reported in week 14: one infant under 6 months of age, one adult 20-44 years of age, four adults 45-64 years of age, and one adult ≥65 years of age; five of the seven cases had influenza A. Five deaths were reported in week 14; all of which were adults ≥65 years of age, and four of the five had influenza B. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 3,946 influenza-associated hospitalizations have been reported, 87.5% with influenza A. The majority (58.3%) of hospitalizations have been cases 45 years of age of older. A significantly greater proportion of cases of influenza B have been ≥65 years of age, and 5-19 years of age, compared to cases of A(H1N1)pdm09 this season (Table 6). A total of 332 ICU admissions have been reported this season, of which 65.1% were adults 20-64 years of age. A total of 223 deaths have been reported. An equal proportion of deaths have been among adults 20-64 years of age and adults ≥65 years of age (each 45.7%). In keeping with the late-season circulation, influenza B has been increasingly reported among hospitalized cases of influenza. To date this season, influenza B has been reported in 12.5% of hospitalizations and 12.1% of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 5 Apr. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	591	282	7	302	68	659 (17%)
5-14	130	64	5	61	61	191 (5%)
15-19	35	20	3	12	2	37 (1%)
20-44	593	415	4	174	33	626 (16%)
45-64	1089	688	25	376	94	1183 (30%)
65+	888	458	73	357	229	1117 (28%)
Unknown	128	97	3	28	5	133 (3%)
Total	3454	2024	120	1310	492	3946
Percentage[1]	87.5%	58.6%	3.5%	37.9%	12.5%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Eight new cases of human infection with influenza A(H7N9) have been reported by the World Health Organization since the last FluWatch report. Globally to April 10, 2014, the WHO has been informed of a total of 414 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 142 deaths.

PHAC – Avian influenza A(H7N9)

WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Six new laboratory-confirmed cases of MERS-CoV, with two deaths, have been reported by the World Health Organization since the last FluWatch report. Globally, from September 2012 to date, the WHO has been informed of a total of 212 laboratory-confirmed cases of infection with MERS-CoV, including 88 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)

WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.